14. Bats

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1 TAXONOMY, DISTRIBUTION AND BIOLOGY

The Order Chiroptera includes 202 genera and over 1116 species (Wilson & Reeder 2005). Seventy-nine species are recognised in Australia. The Family Pteropodidae (fruit-bats or pteropodids) includes 13 of these species, which also occur in New Guinea or surrounding islands. This Family is distinguished from others by external appearance and dietary preferences and includes the blossom bats, tube-nosed bats, fruit-bats and flying-foxes. In this chapter, unless otherwise specified, we use the term 'pteropodids' to refer to these species. The insectivorous and carnivorous bats (Families Megadermatidae—ghost bats, Rhinolophidae—horseshoe-bats, Hipposideridae—leaf-nosed bats, Emballonuridae—sheath-tailed bats, Molossidae—free-tailed bats and Vespertilionidae—ordinary bats) include 66 species of which 27 also occur in New Guinea or surrounding islands. Identification is made through their significant morphological (Table 14.1) and dietary diversity (Jackson 2003; Strahan 1995; Wilson & Reeder 2005).

The majority of Australian bat species probably entered from New Guinea. The high species diversity on Cape York is a reflection of this migration, its close geographical proximity and diversity of habitats. Bat diversity diminishes with increasing latitude with only six species found in Tasmania (Strahan 1995; Hall & Richards 2000).

Both the spectacled (*Pteropus conspicillatus*) and grey-headed (*P. poliocephalus*) flying-foxes are listed as vulnerable, as are several species of insectivorous and carnivorous bats. Six other insectivorous and carnivorous bat species are thought to be extinct, critically endangered or endangered (Environment Australia 1999).

Over much of their range, pteropodids are now affected by increasing urbanisation and exotic fruit cultivation which can lead to fragmentation of traditional roosting sites. Pteropodids normally move from one part of their roost site to another over the seasons, preventing significant damage to the roost trees, but the restricted size of the urban camps means there is now a greater impact on the trees and many are significantly damaged or killed before the colony moves on. However, in spite of these limitations, pteropodids often choose urban campsites where they are sheltered by surrounding buildings, protected from shooting and have ready access to flowering garden trees and cultivated fruit trees. Together with the increased media focus on the potential zoonotic disease risks of pteropodids, increased pressure is being placed on government agencies to relocate or destroy populations in urban areas.

2 ANATOMY AND PHYSIOLOGY

The anatomy and physiology of bats is similar to most other eutherian mammals. However, there are a few notable exceptions, primarily in relation to their capacity for flight.